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(54) **REHYDRATION DRINK**
REHYDRATATIONSGETRAENK
BOISSON REHYDRATANTE

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Description

BACKGROUND OF THE INVENTION

1.Field of the Invention

The present invention relates to a new liquid composition, a method for producing this composition and the use of this composition as rehydration drink.

2.Description of the Related Art

There are a number of liquid compositions or diluted mixtures on the market by the name of "Activity Drinks", "Sports Drinks" or "Nutrient Drinks" which intend to solve problems with respect to the loss of sugars, electrolytes, vitamins, minerals, amino acids, and other important nutrients due to sweating.

These drinks, however, show concentrations of electrolytes, kinds of sugars, and osmotic characteristics which are not sufficient to be totally effective in replacing the tremendous sweat losses incurred e.g. by chronically ill patients, strenuous physical activity, or the harsh conditions of tropical or desert environment. US Patent 4,626,527 describes a similar intent but discloses only the use of choline.

Several groups of people, including factory and farm workers and athletes can lose one to two liters of sweat per hour with heavy clothing. Chronically ill patients or patients who rely on others to care for them may lose more fluid than what they consume. Newcomers to the desert, with clothing and heavy packs, can lose up to four liters per hour.

There are a number of serious symptoms of heat exhaustion which may develop as one loses from as little as one liter to as much as four liters or more of sweat. These symptoms include e.g. vertigo/dizziness, light-headedness, fatigue and muscle cramps. Most of the symptoms are obvious to the individual, but sometimes light-headedness is not, because a light-headed individual is unable to think or act appropriately.

Thus, most of these people lose sweat which contains not only water, but more importantly, sugars, electrolytes, vitamins, minerals, amino acids, and other important nutrients. Each of these are vital for proper cellular function, including brain function.

Drinking water alone will not replace the vital nutrients and will also cause stomach cramps because of the difference of the osmotic properties of water on the one hand and stomach fluids on the other hand, and because it requires time for the body to assimilate the water.

The use of salt tablets is not recommendable because the excess sodium withdraws water or suppresses more of the other vital electrolytes from the body.

OBJECT OF THE INVENTION

Since the related art did not solve the problems properly, there was a need for a proper medical formulation which will protect people and promote their well being under various adverse conditions connected with excessive loss of water, e.g. excessive perspiration.

The present invention is thus specifically concerned with the provision of a new rehydration drink. It is therefore the object of the present invention to provide a liquid composition which overcomes all the above mentioned disadvantages, and which reduces vertigo/dizziness, light-headedness, fatigue and muscle cramps caused by excessive water loss. Fatigue as used herein means the subjective feeling of tiredness as well as the objective fatigue of muscles and the actual decrease of performance.

SUMMARY OF THE INVENTION

The solution for the objects of the invention was found in a new liquid composition comprising per serving unit:

a) 1 to 100 g of at least one carbohydrate,
b) 2 to 2500 mg of at least one electrolyte,
c) 0,1 to 750 mg of at least one ammonia neutralizer,
d) at least one energy enhancer, preferably selected from
d_1) 1-2'000 µg vitamins of the vitamin B group,
d_2) 10-40'000 mg L-carnitine, creatine and choline, and
d_3) 1-100 mg branched-chain amino acids,
e) at least one antioxidant, preferably selected from
e_1) β-carotene in a quantity of 2 µg - 200 mg,
e_2) vitamin C in a quantity of 10-250 mg,

e_3) vitamin E in a quantity of 8-30 I.U., and

e_4) selenium in a quantity of 10-300 µg,

f) 1 to 30 mg of at least one membrane stabilizer,

g) 1 to 200 µg of at least one neuromuscular enhancer, and

h) water in a quantity at least sufficient to provide a solution wherein components a) to g) are substantially dissolved and which is ready for consumption by drinking.

The ingredients of the above components a) to g) as well as the water for dissolving these ingredients (component h) should, of course, be physiologically acceptable.

The present invention also relates to a composition which is suitable for producing the above liquid composition, i.e. a solid composition containing the above components a) to g), which solid composition can be obtained by homogeneously mixing the components a) to g), and which can be converted to the above liquid composition by adding water (component h) in a quantity at least sufficient to substantially dissolve all of components a) to g) to form a drinkable solution.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Among the carbohydrates of component a) are various sugars, monosaccharides as well as oligosaccharides. Typical examples are N-acetyl-D-galactosamine, D-glucose (dextrose, grape sugar, corn sugar), D-glucosamine, N-acetyl-D-glucosamine, N-methyl-D-glucosamine, D-mannose, D-ribose, D-xylose D-fructose, D-galactose, D-galactosamine, cellobiose, maltose, galactose, and sucrose.

These carbohydrates are either in the form of monomers like D-fructose or in the form of polymers e.g. glucose polymers, such as maltose or maltodextrin, in which a series of glucose molecules is bond together chemically. Such polymers can be made from any of the above sugars, which are cleaved enzymatically in the body; this process consequently provides a constant source of energy made available to the body over a course of one to two hours.

The preferred carbohydrates are the glucose polymers, maltodextrin and fructose in crystalline pure form; most preferred are the glucose polymers. The preferred range of the carbohydrates is 1 to 35 mg.

The component b) is an electrolyte, particularly mineral salt. Preferred electrolytes are salts of a metal of the group I and II of the Periodic System, preferably the inorganic and organic salts of sodium, potassium, calcium and/or magnesium. Examples of such salts are sodium acetate, acidic sodium citrate, acidic sodium phosphate, sodium amino salicylate, sodium bicarbonate, sodium bromide, sodium chloride, sodium citrate, sodium lactate, sodium phosphate, sodium salicylate, sodium sulphate (anhydrous), sodium sulphate (Glauber's salt), potassium acetate, potassium bicarbonate, potassium bromide, potassium chloride, potassium citrate, potassium-D-gluconate, mono- and dibasic potassium phosphate, calcium acetate, calcium chloride, calcium citrate, calcium-D-gluconate, calcium lactate, calcium laevulinate, dibasic calcium phosphate, magnesium chloride and magnesium sulphate.

The preferred salts are sodium bicarbonate, sodium phosphate, potassium bicarbonate, potassium chloride, dibasic potassium phosphate, calcium carbonate and magnesium carbonate. The electrolytes are present in amounts of 2 to 2500 mg, preferably in amounts of 5 to 1'000 mg.

Ammonia neutralizers of component c) are mainly amino acids e.g. α-alanine, arginine, asparagine, cystine, cysteine, aspartic acid, glutamic acid, glutamine, glycine, histidine, δ-hydroxylysine, hydroxyproline, lysine, 3-monoiodotyrosine, leucine, methionine, norleucine, phenylalanine, proline, threonine, serine, tyrosine, tryptophan and the salts thereof, e.g. the potassium, magnesium and the phosphate salts.

Preferred amino acids or salts thereof are D,L-magnesium aspartate, L-arginine and glutamate. The preferred range of the amino acids is 5 to 250 mg.

Energy enhancers of component d) are preferably vitamins of the vitamin B group, e.g. vitamin B1 (thiamine, aneurin), vitamin B2 (riboflavin), vitamin PP (niacin amide), vitamin B6 (pyridoxine), pantothenic acid and L-carnitine; creatine, choline (bitartrate or its other forms); and branched chain amino acids, particularly leucine, valine and isoleucine. Preferred quantities of vitamins of the B group (component d_1) are 10-500 µg, preferred quantities of L-carnitine, creatine and choline (component d_2) are 50-500 mg and preferred quantities of branched-chain amino acids (leucine, isoleucine and valine) are 3-10 mg.

Preferred quantities of antioxidants (component e) are as follows: β-carotene: 5-100 µg, vitamin C: 20-100 mg, vitamin E: 10-20 I.U., and selenium: 50-200 µg.

Membrane stabilizers of component f) are preferably betaine and methionine in a range of 1-30 mg, preferably 4 to 10 mg.

An example of a neuromuscular enhancer (component g) is the choline (choline bitartrate) already referred to under d) above. Preferred neuromuscular enhancers are higher saturated fatty alcohols, particularly C_{25} - C_{30} fatty alcohols, preferably octacosanol (cerotyl alcohol) which can be used in quantities of 1-2'000 µg, preferably 3-20 µg, most preferably about 5 µg.

Within the broad scope of the invention described above, two lines of more specific compositions have been developed, which constitute preferred embodiments of the invention. The first line embraces compositions which are particularly suited for the administration to people who do heavy work under severe conditions and particularly at high ambient temperatures and to sports enthusiasts and athletes. This line is represented by the compositions under the heading "Drink A" in Table 1 below. The second line embraces compositions which are particularly suited for patients who exhibit dehydration symptoms due to severe diarrhoea or vomiting for a variety of causes such as gastrointestinal disorders, cardiovascular disorders, and chronic illnesses, such as cancer. Compositions of this type are represented by those set forth under the heading "Drink B" in Table 1 below. Figures underlined in Table 1 (such as "32" relating to "Glucose Polymers" in the left column) refer to the specific "Drink A" and "Drink B", respectively, administered in the course of the tests which will be described later-on. The compositions containing these underlined quantities of ingredients are particularly preferred.

The quantities of the various components of the compositions according to the present invention relate, throughout the specification and the claims, in each case to serving units or rations, i.e. to quantities of drink served, administered or consumed at one time. It will be well understood that such serving units are commonly not prepared individually. For the sake of simplicity and economy greater quantities are usually prepared which are composed of multiples of such serving units. Accordingly, it must be kept in mind that the figures relating to these serving units must be extrapolated by multiplication by any desired multiplicator so that any desired quantity of a composition is included. Thus, although the figures shown in Table 1 and elsewhere in the specification as well as in the claims relate to a serving unit, they have to be understood as comprising any multiple thereof.

In preparing the various liquid compositions, the components listed in Table 1 are homogeneously mixed and dissolved in a sufficient quantity of water to provide a solution ready for consumption by drinking.

TABLE 1:

Ingredients	Drink A	Drink B
CARBOHYDRATES		
Glucose Polymers (g)	20-26-<u>32</u>-50-100	7-10-<u>14</u>-40-80
Maltodextrin (mg)	10-20-<u>30</u>-50-15	10-15-<u>25</u>-50-100
Fructose (g)	1-1.5-<u>2</u>-5-15	1-1.5-<u>2</u>-5-15
ELECTROLYTES		
$KHCO_3$ (mg)	100-500-<u>960</u>-1500-2500	50-100-<u>200</u>-500-1500

$NaHCO_3$ (mg)	20-30-40-5-60	2-3-4-5-10
KCl (mg)	100-150-200-500-2'000	20-30-40-800-1500
K_3PO_4 (mg)	100-150-200-500-2'000	20-30-40-800-1500
Na_3PO_4 (mg)	50-150-300-500-750	5-15-30-50-75
$CaCO_3$ (mg)	5-15-20-40-200	5-15-20-40-200
$MgCO_3$ (mg)	5-15-20-40-200	5-15-20-40-200
AMMONIA NEUTRALIZERS		
D,L-Aspartic Acid or Magnesium Aspartate (mg)	10-100-200-500-750	1-10-20-50-75
L-Arginine (µg)	20-100-200-500-750	2-10-20-50-75
Glutamate (mg)	1-5-10-30-100	1-5-10-30-50
ENERGY ENHANCERS		
Vitamin B1 (µg)	1-3-5-50-500	1-3-5-50-500
Vitamin B2 (µg)	10-50-100-500-2'000	10-50-100-500-2000
Niacin amide (µg)	10-50-100-500-2'000	10-50-100-500-2000
Vitamin B6 (µg)	10-50-100-500-2'000	10-50-100-500-2000
Pantothenic Acid (µg)	10-50-100-500-2'000	10-50-100-500-2000
L-Carnitine (mg)	10-50-100-500-2'000	1-50-10-50-200
Creatine (mg)	10-50-100-500-1'000	5-8-10-50-200
Choline bitartrate(mg)	4-200-400-4000-40'000	4-20-40-400-4'000
BRANCHED CHAIN AMINO ACIDS		
Leucine (mg)	1-3-5-10-50	1-3-5-10-50
Isoleucine (mg)	1-3-5-10-100	1-3-5-10-100
Valine (mg)	1-3-5-10-100	1-3-5-10-100
ANTIOXIDANTS		
Beta-Carotene (µg)	5-8-10-100-200	2-3-5-10-100
Vitamin C (mg)	20-30-60-120-250	10-30-60-70-90
Vitamin E (I.U.)	10-12-15-20-30	8-9-10-12-15
Selenium (µg)	10-50-100-200-300	10-20-50-100-200
MEMBRANE STABILIZERS or METHYLDONORS		
Betaine chloride (µg)	1-3-5-10-25	1-3-5-10-25
Methionine (µg)	3-4-5-20-30	1-3-5-10-20

NEUROMUSCULAR ENHANCERS		
Octacosanol (µg)	1-3-5-100-200	1-3-5-10-20

The preferred liquid composition of the present invention combines about 30 different macronutrients and micronutrients. Very surprisingly, a truly spectacular result is obtained, eliminating nearly completely all fatigue and dehydration symptoms, in both the sports and with dehydrated patients.

The new liquid composition according to the present invention can be manufactured by known methods, e.g. powdering each compound a) through g), mixing them together in the ranges of the amounts given, diluting the resulting mixture with water, and homogenising.

In view of the specific qualitative and quantitative combination of the components a) through g), the liquid composition is useful as rehydration drink. This drink repletes the nutrients and water losses which occur while sweating during physical exertion or water losses due to diarrhoea or vomiting. This drink can be administered to a human body with no restriction concerning age, sex, medical history, drug therapy and food consumption, who lost water and nutrients in different ways and for different reasons, especially patients who e.g. clinically exhibit dehydration symptoms, sports enthusiasts and people who require sustained energy. The drink is also useful for patients in nursing homes and hospitals, patients with diarrhoea, people who work outdoors, professional athletes, or those who require sustained energy while working. Finally the drink is effective under tropical or desert conditions to compensate for the quantity of liquid lost. The drink may be given a pleasant taste to stimulate consumption.

The following tests were carried out using compositions according to the present invention (Drink A and Drink B):

Two groups of people (group I and II) were analysed. Group I was composed of 25 people who were active athletes involved in many sports, particularly basketball, soccer and American football. Group II was composed of 20 patients who clinically exhibited dehydration symptoms secondary to severe diarrhoea or vomiting from a variety of causes including cancer, gastrointestinal disorders, and chronically institutionalized patients.

"Quality of life scales", a term which is used for describing a series of qualities of life, are an acceptable way of evaluating any treatment not by the physician, but rather by the patient himself/herself. The patient decides whether the treatment is beneficial or not. These scales have been successfully used to evaluate cardiovascular treatments, cancer treatments, and treatments of other chronic illnesses.

The scoring system is simple. The person decides if the treatment has improved, worsened, or has made no change in his/her life during the treatment period. Each person is asked to score themselves before and after using the drink. The amount served was 1 cup (1 serving unit) of Drink A containing about 33 g of carbohydrates and about 554 kJ (132 calories), and 1 cup (1 serving unit) of Drink B containing about 15 g of carbohydrates and about 252 kJ (60 calories). Either drink would have been alright for either group, but athletes need more energy and drink A has more energy calories as well as enhancing agents. The results of these tests are shown in Table 2.

TABLE 2: Quality of Life Scales

	Group I/Drink A		Group II/Drink B	
	Improve/No Change	/Worsen	Improve/No Change	/Worsen
Physical Symptoms Fatigue Dizziness, Vertigo Lightheadedness Muscle cramps	25		19	1
Performance	23	2	18	2
General Well Being	25		20	
Cognitive Abilities	25		17	3
Life Satisfaction	25		20	

Further tests were made with Group I and Group II people and with Drink A and Drink B. Blood values were obtained of all 25 patients in Group I (athletes) and all 20 patients in Group II (patients) before and after administration of the rehydration drink A to Group I and Drink B to Group II.

Group I- Active Athletes:

A blood sample was obtained on all athletes half way through the end of the strenuous exercise. For example, this was at half time of the basketball, soccer, or American football game, or half way through (at least 45 minutes) a strenuous exercise work-out for others (body-builders, runners, etc.). After the blood was obtained, the athletes began to drink 113 to 169 g (four to six oz.) of Drink A every 15 to 20 minutes until the games or exercises were completed, at which time a second blood sample was obtained. The two sets of blood values were compared (Tables 3 to 6).

The first blood samples were analysed and consistently revealed a picture of Type A Lactic Acidosis due to hypoxemia in this group. **Lactic acidosis is characterized by:**

1) Increased Anion Gap (A.G.) (>25 mEq/l; normal range = 8-16 mEq/l). The Anion Gap is defined as: Sodium (Na) - [Chloride (Cl) + Bicarbonate (HCO_3)]
2) Decreased serum bicarbonate (normal range 24-26 mEq/l)
3) Increased serum potassium (> 5,5; normal 3,5-5,3 mEq/l)
4) Low or normal serum chloride (normal 96-109 mEq/l)
5) Increased serum uric acid (normal range = 3-9 mg/dl)
6) Increased serum phosphorus (normal range 2,5-4,5 mg/dl)
7) Increased serum SGOT (normal range 0-40 Units/liter)
8) Increased serum LDH (normal range 100-225 Units/liter)
9) Decreased urine pH (normal range 5,1-9,0)
10) Increased lactate (>5, normal range 0-1,6 mEq/liter)

TABLE 3

Hallmarks of lactic acidosis seen in athletes, especially type A which is due to hypoxemia, the number of athletes with those values and the range.			
blood parameter	hallmark of lactic acidosis	number of athletes with this value	range of athletes blood values
anion gap (A.G.)	>25 mEq/lt	23 of 25	22-31
lactate level	>5,0 mEq/lt	All 25	5,1-7,1
urine pH	<5,2	All 25	4,0-5,0
chloride level	low or <96 mEq/lt	23 of 25	92-100
bicarbonate level	<24 mEq/lt	All 25	20-23
potassium level	>5,6 mEq/lt	All 25	5,6-6,3
uric acid level	>9 mg/dl	24 of 25	8-17
phosphorus	>4,5 mg/dl	All 25	4,5-5,1
S-GOT	>40 IU/l	22 of 25	35-47
LDH	>225 IU/l	24 of 25	225-246

TABLE 4

Blood Values (a. normal range, and of Athletes No. 1 through 25 at half-time of exercise, before rehydration drink A was administered:											
No	Na	Cl	HCO_3	A.G.	Lact	K	Uric Acid	P	Urin pH	SGOT	LDH
a.	135-147	96-109	24-26	8-16	0-16	3.5-5.3	3-9	2.5-4.5	5.2-9.0	0-40	100-225
1	140	93	20	27	6,1	5,8	11	4,7	5,0	41	230
2	146	96	23	27	7,1	5,6	12	4,9	4,0	42	227
3	147	100	22	25	5,5	5,7	9	5,1	5,0	40	232
4	141	95	22	24	5,1	5,9	10	4,6	5,0	35	234
5	137	95	20	22	5,2	5,7	8	4,8	5,0	42	224
6	138	93	22	23	5,6	6,1	11	5,0	5,0	45	226
7	142	95	21	26	5,9	6,0	13	4,7	5,0	39	229
8	145	94	20	31	6,8	5,7	15	4,8	4,0	44	246
9	144	95	21	28	6,3	6,0	14	4,6	4,0	43	241
10	142	93	21	28	6,2	5,6	15	4,5	4,0	42	229
11	139	92	20	27	6,2	6,1	13	4,7	4,0	44	225
12	146	94	23	29	6,3	5,8	16	4,8	4,0	42	232
13	145	95	21	29	6,6	5,9	14	5,0	4,0	41	234
14	144	93	22	29	6,6	5,7	13	4,9	4,0	47	227
15	146	94	21	31	7,1	6,2	17	5,0	4,0	45	239
16	139	94	21	24	5,6	5,6	11	4,6	5,0	41	235
17	145	93	22	30	7,0	6,1	16	4,9	4,0	46	239
18	143	94	21	28	6,4	6,0	12	5,0	4,0	42	241
19	142	95	22	25	5,9	5,7	9	4,6	5,0	36	235
20	145	94	20	31	6,8	6,3	13	4,9	4,0	47	236
21	139	92	20	27	5,9	6,1	15	4,9	5,0	44	228
22	140	94	21	25	5,4	5,6	9	5,0	4,0	42	226
23	146	93	23	30	6,8	6,1	16	5,1	4,0	46	234
24	143	92	20	31	6,7	6,3	14	4,8	4,0	45	237
25	147	97	22	28	6,6	5,9	13	4,7	4,0	41	231

TABLE 5

Blood values of group I athletes at the end of game/exercise *after* administration of rehydration drink A											
No	Na	Cl	HCO_3	A.G.	lactate	K	uric acid	P	urin pH	SGOT	LDH
a.	135-147	96-109	24-26	8-16	0-16	3.5-5.3	3-9	2.5-4.5	5.2-9.0	0-40	100-225
1	140	105	25	10	0,8	3,9	8,0	4,1	8,0	31	109
2	142	106	24	12	1,2	5,0	7,0	4,0	8,0	27	201
3	139	103	26	10	1,1	4,9	7,0	3,7	6,0	36	217
4	141	101	25	15	1,5	5,1	8,0	2,9	8,0	26	222
5	147	108	26	13	0,5	3,8	3,0	3,1	8,0	29	199
6	137	99	26	12	1,4	4,7	5,0	3,9	7,0	40	109
7	140	108	24	8	1,1	4,5	8,0	4,3	6,0	19	216
8	136	101	25	10	1,2	3,9	4,0	3,0	7,0	26	193
9	139	99	26	14	1,5	4,2	7,0	2,7	9,0	37	129
10	142	105	24	13	0,9	4,8	5,0	3,6	8,0	24	147
11	137	96	25	16	1,3	4,1	3,0	3,3	8,0	19	192
12	145	107	26	12	0,2	3,7	5,0	4,2	6,0	26	178
13	140	99	26	15	1,4	5,0	4,0	2,8	7,0	30	201
14	147	108	25	14	0,7	4,3	8,0	4,1	8,0	27	219
15	137	96	25	16	0,3	4,0	6,0	3,6	6,0	16	184
16	135	97	24	14	1,2	5,0	4,0	2,5	6,0	32	191
17	139	99	24	16	0,9	5,2	7,0	2,7	8,0	22	217
18	140	105	25	10	0,6	3,7	4,0	3,7	7,0	12	157
19	145	108	24	13	0,4	5,1	8,0	4,0	6,0	25	152
20	138	103	26	9	1,4	3,9	3,0	3,2	8,0	8	183
21	142	106	25	11	0,8	4,7	4,0	2,9	6,0	36	222
22	143	107	24	12	1,3	4,4	7,0	2,7	7,0	25	166
23	137	102	24	11	0,6	3,6	5,0	4,5	6,0	30	200
24	140	99	26	15	1,3	4,8	7,0	3,9	8,0	17	226
25	145	104	25	16	0,7	5,1	8,0	3,1	6,0	39	196

TABLE 6

shows that all 25 athletes had normal blood values after drinking rehydration drink A:			
blood parameter	hallmark of lactic acidosis	number of athletes with normal values	range of athletes' blood values
anion gap	>25 mEq/lt	all 25	8-16
lactate level	>5,0 mEq/lt	all 25	0,2-1,5
urine pH	<5,2	all 25	6-9
chloride level	low or <96 mEq/lt	all 25	96-108
bicarbonate level	<24 mEq/lt	all 25	24-26
potassium level	>5,6 mEq/lt	all 25	3,6-5,2
uric acid level	>9 mg/dl	all 25	3-8
phosphorus	>4,5 mg/dl	all 25	2,5-4,5
S-GOT	>40 IU/l	all 25	8-40
LDH	>225 IU/l	all 25	109-226

Group II - Patients

A blood sample was obtained of all 20 patients with various illnesses listed in Table 7. After drinking 113 to 169 g (four to six ounces) of the rehydration drink B every 20 to 30 minutes for two and a half to three hours, a second blood specimen was obtained. The two sets of blood values were compared.

Three patients had diarrhoea which produces a metabolic acidosis characterized by low bicarbonate, a normal to low chloride, and **unlike** lactic acidosis, a low potassium, and a low sodium. These features are shown in Table 7.

Two patients had nausea and vomiting which produces a metabolic alkalosis characterized by an elevated bicarbonate, an elevated sodium, a low potassium, and a normal to low chloride. Both patients had these blood changes.

Lactic acidosis Type B (no clinical tissue hypoxia) seen with Infections, Diabetes, Cancer, and Alcohol use; Lactic acidosis Type A (due to clinically apparent hypoxia) seen with dehydration in nursing home patients.

TABLE 7

Blood Values (a.: normal, and of 20 Group II patients before the administration of rehydration drink B (Diar = diarrhoea; Naus = nausea, vomiting; Alc = Alcohol; Inf = infections; Diab = diabetes; Canc = cancer; Home = dehydrated nurse home patients)

	Na	Cl	HCO_3	A.G.	Lact	K	Uric Acid	P	Urin pH	SGOT	LDH
a.	135-147	96-109	24-26	8-16	0-16	3.5-5.3	3-9	2.5-4.5	5.2-9.0	0-40	100-225
Diar	129	95	17	17	5,2	3,3	18,0	4,9	4	46	236
Diar	130	96	15	19	4,9	3,4	17	5,1	4	41	241
Diar	127	94	15	18	5,3	3,1	15,0	4,7	5	48	229
Naus	150	94	28	28	0,8	3,2	16,0	4,6	9	40	226
Naus	151	93	30	28	1,1	3,0	18,0	4,7	9	47	230
Inf	141	93	23	25	2,4	5,8	12	5,1	3	40	240
Inf	143	94	21	28	2,7	6,2	13	4,9	4	46	237
Diab	146	99	20	27	5,1	5,6	11	5,2	4	40	245
Diab	144	95	21	28	5,2	5,9	19	5,0	3	44	235
Diab	139	93	20	26	5,7	5,7	12	4,8	3	42	228
Canc	140	91	21	28	5,9	5,8	15	5,3	4	53	317
Canc	142	95	22	25	6,2	5,9	17	4,9	5	49	300
Canc	137	92	22	23	5,6	6,1	13	4,6	3	52	278
Canc	138	94	21	23	6,0	6,2	16	5,1	4	61	259
Alc	147	101	21	25	5,0	5,9	14	4,9	4	59	266
Home	145	93	22	30	7,0	6,1	16	4,9	4	46	242
Home	139	92	20	27	6,2	6,1	13	4,7	4	49	225
Home	143	92	20	31	6,5	6,0	14	4,9	5	47	236
Home	142	95	22	25	7,0	5,6	16	5,1	3	36	226
Home	136	92	21	23	4,6	6,0	12	4,8	4	45	233

All 20 patients demonstrate the characteristic blood changes seen with the disorders listed, whether it be metabolic acidosis associated with diabetes, metabolic alkalosis associated with nausea and vomiting, or lactic acidosis associated with infections, diabetes, cancer, alcohol, or dehydration seen in nursing home patients who are not well attended and who forget to drink on a regular basis.

Each blood parameter became normal for all patients studied after the rehydration drink B was given to them as shown in:

TABLE 8

Blood Values (a.: normal, and of 20 Group II patients after the administration of rehydration drink B (Diar = diarrhoea; Naus = nausea, vomiting; Alc = Alcohol; Inf = infections; Diab = diabetes; Canc = cancer; Home = dehydrated nurse home patients)

	Na	Cl	HCO_3	A.G.	Lact	K	Uric Acid	P	Urin pH	SGOT	LDH
a.	135-147	96-109	24-26	8-16	0-16	3.5-5.3	3-9	2.5-4.5	5.2-9.0	0-40	100-225
Diar	141	99	26	16	0,9	5,1	8	4,2	8	40	148
Diar	139	103	24	12	1,3	4,9	3	2,9	6	22	217
Diar	143	105	25	13	1,0	4,6	6	3,6	9	31	196
Naus	140	107	24	9	0,8	5,2	9	4,1	5	19	154
Naus	145	108	26	11	1,4	5,0	5	2,6	6	27	219
Inf	142	104	24	14	0,7	3,7	7	4,0	7	12	201
Inf	136	102	25	9	0,4	4,9	4	2,8	8	25	224
Diab	144	106	26	12	1,5	5,4	8	3,5	6	36	133
Diab	135	101	25	9	1,2	4,7	9	4,4	7	33	168
Diab	146	109	24	13	1,4	5,2	3	2,9	9	34	214
Canc	137	98	25	14	0,9	4,0	4	3,3	7	55	309
Canc	139	97	26	16	1,1	4,7	8	4,3	6	47	294
Canc	142	105	24	13	0,8	5,0	5	3,9	8	60	281
Canc	147	108	26	13	1,6	5,3	7	4,5	6	59	262
Alc	138	99	25	14	1,5	4,2	7	2,7	9	38	199
Home	140	107	24	9	1,3	3,9	3	4,2	8	19	209
Home	145	109	26	10	0,8	3,6	4	3,0	6	20	200
Home	139	100	24	15	1,5	5,1	6	3,7	7	40	155
Home	141	103	25	13	1,1	4,5	9	2,6	6	35	205
Home	143	106	24	13	1,0	3,7	8	4,4	9	15	186

CONCLUSION: For both groups of athletes (Group I) and patients (Group II) it was demonstrated that their initial blood values were consistent with the acid-base disorder characteristic for those specific groups. It was further demonstrated that the blood abnormalities became normalized after each person drank rehydration drink A or B respectively.

The invention is defined by the claims.

Claims

1. A liquid composition to be used as a rehydration drink, containing per serving unit water at least the following components:

   a) 1 to 100 g of at least one carbohydrate,
   b) 2 to 2500 mg of at least one electrolyte,
   c) 0,1 to 750 mg of at least one ammonia neutralizer,
   d) at least one energy enhancer,
   e) at least one antioxidant
   f) 1 to 30 mg of at least one membrane stabilizer,

g) 1 to 200 μg of at least one neuromuscular function enhancer, and

h) water in a quantity at least sufficient to provide a solution wherein components a) to g) are substantially dissolved and which solution is ready for consumption by drinking.

2. A composition according to claim 1, wherein the carbohydrate is selected from the group comprising monosaccharides, preferably N-acetyl-D-galactosamine, D-glucose (dextrose, grape sugar, corn sugar), D-glucosamine, N-acetyl-D-glucosamine, N-methyl-D-glucosamine, D-mannose, D-ribose, D-xylose, D-fructose, D-galactose, D-galactosamine; disaccharides, preferably cellobiose, maltose, galactose, sucrose; and polymeric forms of the mono- and disaccharides, preferably glucose polymers and maltodextrin.

3. A composition according to claim 1, wherein the electrolyte is selected from the group comprising salts of a metal of Group I and II of the periodic system.

4. A composition according to claim 3, wherein the electrolyte is selected from the group comprising sodium bicarbonate, sodium phosphate, acidic sodium phosphate, potassium bicarbonate, potassium chloride, dibasic potassium phosphate, calcium carbonate and magnesium carbonate.

5. A composition according to claim 1, wherein the ammonia neutralizer is selected from the group comprising amino acids and their salts.

6. A composition according to claim 5, wherein the ammonia neutralizer is selected from the group comprising D,L-magnesium aspartate, L-arginine, and glutamate.

7. A composition according to claim 1, wherein the energy enhancer is selected from the group comprising vitamins of the vitamin B group, branched chain amino acids, L-carnitine, creatine and choline.

8. A composition according to claim 7, wherein the energy enhancer is selected from the group comprising vitamins of the vitamin B group in a quantity of 1 - 2'000 μg; L-carnitine, creatine and choline in a quantity of 10 - 40'000 mg, and branched-chain amino acids in a quantity of 1 - 100 mg.

9. A composition according to claim 8, wherein the energy enhancer comprises at least one compound of the group comprising vitamin B1, vitamin B2, niacinamide, vitamin B6, pantothenic acid, L-carnitine, creatine, choline bitartrate, leucine, isoleucine and valine.

10. A composition according to claim 1, wherein the antioxidant is selected from the group comprising β-carotene in a quantity of 2 μg - 200 mg, vitamin C in a quantity of 10-250 mg, vitamin E in a quantity of 8-30 I.U., and selenium in a quantity of 10-300 μg.

11. A composition according to claim 1, wherein the membrane stabilizer is selected from the group comprising choline, betaine and methionine.

12. A composition according to claim 1, wherein the neuromuscular enhancer is selected from choline and higher, preferably C_{25} to C_{30}, saturated fatty alcohols.

13. A composition according to claim 12, wherein the neuromuscular enhancer is octacosanol in quantities of 1 - 200 μg.

14. A composition according to claim 1, containing per serving unit water at least the following components:

a) 1 to 35 g of at least one carbohydrate,
b) 2 to 2500 mg of at least one electrolyte,
c) 5 to 250 mg of at least one ammonia neutralizer,
d_1) 10 - 500 μg vitamins of the vitamin B group,
d_2) 50 - 500 mg L-carnitine, creatine and choline,
d_3) 5 - 50 mg of branched-chain amino acids,
e_1) 5 - 100 μg β-carotene,
e_2) 30 - 120 mg vitamin C,
e_3) 10 - 20 I.U. vitamin E,
e_4) 50 - 100 μg selenium,

f) 3 to 10 mg of at least one membrane stabilizer,

g) 3 to 100 µg of at least one neuromuscular function enhancer.

15. A composition according to Claim 1, containing per serving unit at least the following components:

a) 20-100 g Glucose Polymers
10-150 mg Maltodextrin
1-15 g Fructose

b) 100-2'500 mg Potassium Bicarbonate
20-60 mg Sodium Bicarbonate
100-2'000 mg Potassium Chloride
100-2'000 mg Potassium Phosphate
50-750 mg Sodium Phosphate
5-200 mg Calcium Carbonate
5-200 mg Magnesium Carbonate

c) 10-750 g D,L-Aspartic Acid (Magnesium Aspartate)
20-750 µg L-Arginine
1-100 mg Glutamate

d) 1-500 µg Vitamin B1
10-2'000 µg Vitamin B2
10-2'000 µg Niacinamide
10-2'000 µg Vitamin B6
10-2'000 µg Pantothenic Acid
10-2'000 mg L-Carnitine
10-1'000 mg Creatine
4-40'000 mg Choline
1-50 mg Leucine
1-100 mg Isoleucine
1-100 mg Valine

e) 5-200 µg β-Carotene
20-250 mg Vitamin C
10-30 I.U. Vitamin E
10-300 µg Selenium

f) 1-25 mg Betaine
3-30 mg Methionine

g) 1-200 µg Octacosanol

to be used as a rehydration drink, particularly suited for the administration to people who do heavy work under severe conditions at high temperatures, and to sports enthusiasts and athletes.

16. A composition according to Claim 1, containing per serving unit at least the following components:

a) 7 - 80 g Glucose Polymers
10 - 100 mg Maltodextrin
1 - 15 g Fructose

b) 50 - 1'500 mg Potassium Bicarbonate
2 - 10 mg Sodium Bicarbonate
20 - 1'500 mg Potassium Chloride
20 - 1'500 mg Potassium Phosphate
5 - 75 mg Sodium Phosphate
5 - 200 mg Calcium Carbonate
5 - 200 mg Magnesium Carbonate

c) 1 - 75 g D,L-Aspartic Acid (Magnesium Aspartate)
2 - 75 µg L-Arginine
1 - 50 mg Glutamate

d) 1 - 500 µg Vitamin B1
10 - 2'000 µg Vitamin B2
10 - 2'000 µg Niacinamide
10 - 2'000 µg Vitamin B6
10 - 2'000 µg Pantothenic Acid
1 -200 mg L-Carnitine
5 - 100 mg Creatine
4 - 4000 mg Choline
1 - 50 mg Leucine
1 - 100 mg Isoleucine
1 - 100 mg Valine

e) 2 - 100 µg β-Carotene
10 - 90 mg Vitamin C
8 - 15 I.U. Vitamin E
10 - 200 µg Selenium

f) 1 - 25 mg Betaine
1 - 20 mg Methionine

g) 1 - 20 µg Octacosanol

to be used as a rehydration drink, particularly suited for the administration to patients who exhibit dehydration symptoms due to severe diarrhoea or vomiting.

17. Process for the manufacture of a liquid composition to be used as a rehydration drink, wherein components a) - g) set forth in claim 1 or any multiple of the components of a serving unit are mixed, the resulting mixture being dissolved in a quantity of water at least sufficient to provide a solution wherein said components are substantially dissolved to provide a liquid composition ready for consumption by drinking.

18. A composition according to claim 1, wherein components a) to g) are contained in any multiple of a serving unit, useful for preparing serving units from greater quantities.

Patentansprüche

1. Als Rehydrationsgetränk zu verwendende flüssige Zusammensetzung, welche pro Portionseinheit Wasser zumindest die folgenden Bestandteile enthält:

a) 1 bis 100 g wenigstens eines Kohlehydrats,
b) 2 bis 2500 mg mindestens eines Elektrolyten,
c) 0,1 bis 750 mg zumindest eines Ammoniakneutralisators,
d) wenigstens ein Energiesteigerungsmittel
e) mindestens ein Antioxydans,
f) 1 bis 30 mg zumindest eines Membranstabilisators,
g) 1 bis 200 µg wenigstens eines Steigerungsmittels für die neuromuskuläre Funktion, und
h) Wasser in einer Menge, die mindestens ausreicht, eine Lösung zu schaffen, bei der die Bestandteile a) bis g) im wesentlichen gelöst sind, und welche Lösung für die Trinkkonsumation fertig ist.

2. Zusammensetzung nach Anspruch 1, bei der das Kohlehydrat aus der Monosaccharide, vorzugsweise N-Acetyl-D-Galaktosamin, D-Glukose (Dextrose, Traubenzucker, Maiszucker), D-Glukosamin, N-Acetyl-D-Glukosamin, N-Methyl-D-Glukosamin, D-Mannose, D-Ribose, D-Xylose, D-Fruktose, D-Galaktose, D-Galaktosamin; Disaccharide, vorzugsweise Zellobiose, Maltose, Galaktose, Saccharose; und polymere Formen der Mono- und Disaccharide, vorzugsweise Glukosepolymere und Maltodextrin, umfassenden Gruppe gewählt ist.

3. Zusammensetzung nach Anspruch 1, bei der der Elektrolyt aus der Salze eines Metalles der Gruppen I und II des Periodischen Systems umfassenden Gruppe gewählt ist.

4. Zusammensetzung nach Anspruch 3, bei der der Elektrolyt aus der Natriumbikarbonat, Natriumphosphat, saures Natriumphosphat, Kaliumbikarbonat, Kaliumchlorid, dibasisches Kaliumphosphat, Kalziumkarbonat und Magnesiumkarbonat umfassenden Gruppe gewählt ist.

5. Zusammensetzung nach Anspruch 1, bei der der Ammoniakneutralisator aus der Aminosäuren und ihre Salze umfassenden Gruppe gewählt ist.

6. Zusammensetzung nach Anspruch 5, bei der der Ammoniakneutralisator aus der D,L-Magnesiumaspartat, L-Arginin und Glutamat umfassenden Gruppe gewählt ist.

7. Zusammensetzung nach Anspruch 1, bei der das Energiesteigerungsmittel aus der Vitamine der Vitamin-B-Gruppe, verzweigtkettige Aminosäuren, L-Carnitin, Kreatin und Cholin umfassenden Gruppe gewählt ist.

8. Zusammensetzung nach Anspruch 7, bei der das Energiesteigerungsmittel aus der Vitamine der Vitamin-B-Gruppe in einer Menge von 1 - 2000 µg; L-Carnitin, Kreatin und Cholin in einer Menge von 10 - 40 000 mg, und verzweigtkettige Aminosäuren in einer Menge von 1 - 100 mg umfassenden Gruppe gewählt ist.

9. Zusammensetzung nach Anspruch 8, bei der das Energiesteigerungsmittel zumindest eine Verbindung aus der Vitamin B1, Vitamin B2, Niacinamid, Vitamin B6, Pantothensäure, L-Carnitin, Kreatin, Cholin-Bitartrat, Leucin, Isoleucin und Valin umfassenden Gruppe aufweist.

10. Zusammensetzung nach Anspruch 1, bei der das Antioxydans aus der β-Karoten in einer Menge von 2 µg - 200 mg, Vitamin C in einer Menge von 10-250 mg, Vitamin E in einer Menge von 8-30 I.U. und Selen in einer Menge von 10-300 µg umfassenden Gruppe gewählt ist.

11. Zusammensetzung nach Anspruch 1, bei der der Membranstabilisator aus der Cholin, Betain und Methionin umfassenden Gruppe gewählt ist.

12. Zusammensetzung nach Anspruch 1, bei der das neuromuskuläre Steigerungsmittel aus Cholin und höher gesättigten Fettalkoholen, vorzugsweise mit C25 bis C30, gewählt ist.

13. Zusammensetzung nach Anspruch 12, bei der das neuromuskuläre Steigerungsmittel Octacosanol in Mengen von 1 - 200 µg ist.

14. Zusammensetzung nach Anspruch 1, welche pro Portionseinheit Wasser zumindest die folgenden Bestandteile enthält:

a) 1 bis 35 g wenigstens eines Kohlehydrats,
b) 2 bis 2500 mg mindestens eines Elektrolyten,
c) 5 bis 250 mg zumindest eines Ammoniakneutralisators,
d_1) 10 - 500 µg Vitamine der Vitamin-B-Gruppe,
d_2) 50 - 500 mg L-Carnitin, Kreatin und Cholin,
d_3) 5 - 50 mg verzweigtkettige Aminosäuren,
e_1) 5 - 100 µg β-Karoten,
e_2) 30 - 120 mg Vitamin C,
e_3) 10 - 20 I.U. Vitamin E,
e_4) 50 - 100 µg Selen,
f) 3 bis 10 mg zumindest eines Membranstabilisators,
g) 3 bis 100 µg wenigstens eines Steigerungsmittels für die neuromuskuläre Funktion.

15. Zusammensetzung nach Anspruch 1, welche pro Portionseinheit zumindest die folgenden Bestandteile enthält:

a) 20 - 100 g Glukosepolymere
10 - 150 mg Maltodextrin
1 - 15 g Fruktose

b) 100 - 2500 mg Kaliumbikarbonat
20 - 60 mg Natriumbikarbonat
100 - 2000 mg Kaliumchlorid
100 - 2000 mg Kaliumphosphat
50 - 750 mg Natriumphosphat
5 - 200 mg Kalziumkarbonat
5 - 200 mg Magnesiumkarbonat

c) 10 - 750 g D,L-Asparaginsäure (Magnesiumaspartat)
20 - 750 µg L-Arginin
1 - 100 mg Glutamat

d) 1 - 500 µg Vitamin B1
10 - 2000 µg Vitamin B2
10 - 2000 µg Niacinamid
10 - 2000 µg Vitamin B6
10 - 2000 µg Pantothensäure
10 - 2000 mg L-Carnitin
10 - 1000 mg Kreatin
4 -40000 mg Cholin
1 - 50 mg Leucin
1 - 100 mg Isoleucin
1 - 100 mg Valin

e) 5 - 200 µg β-Karoten
20 - 250 mg Vitamin C
10 - 30 I.U. Vitamin E
10 - 300 µg Selen

f) 1 - 25 mg Betain
3 - 30 mg Methionin

g) 1 - 200 µg Octacosanol,

welche als Rehydrationsgetränk verwendet wird, das besonders zur Verabreichung an Leute geeignet ist, die schwere Arbeit unter harten Bedingungen bei hohen Temperaturen leisten, sowie an Sportbegeisterte und Athleten.

16. Zusammensetzung nach Anspruch 1, welche pro Portionseinheit Wasser zumindest die folgenden Bestandteile enthält:

a) 7 - 80 g Glukosepolymere
10 - 100 mg Maltodextrin
1 - 15 g Fruktose

b) 50 - 1500 mg Kaliumbikarbonat
2 - 10 mg Natriumbikarbonat
20 - 1500 mg Kaliumchlorid
20 - 1500 mg Kaliumphosphat
5 - 75 mg Natriumphosphat
5 - 200 mg Kalziumkarbonat
5 - 200 mg Magnesiumkarbonat

c) 1 - 75 g D,L-Asparaginsäure (Magnesiumaspartat)
2 - 75 µg L-Arginin
1 - 50 mg Glutamat

d) 1 - 500 µg Vitamin B1
10 - 2000 µg Vitamin B2

10 - 2000 µg Niacinamid
10 - 2000 µg Vitamin B6
10 - 2000 µg Pantothensäure
1 - 200 mg L-Carnitin
5 - 100 mg Kreatin
4 - 4000 mg Cholin
1 - 50 mg Leucin
1 - 100 mg Isoleucin
1 - 100 mg Valin

e) 2 - 100 µg β-Karoten
10 - 90 mg Vitamin C
8 - 15 I.U. Vitamin E
10 - 200 µg Selen

f) 1 - 25 mg Betain
1 - 20 mg Methionin

g) 1 - 20 µg Octacosanol,

welche als Rehydrationsgetränk verwendet wird, das besonders zur Verabreichung an Patienten geeignet ist, die Dehydrationssymptome auf Grund von schwerer Diarrhoe oder von Erbrechen zeigen.

17. Verfahren zum Herstellen einer als Rehydrationsgetränk zu verwendenden flüssigen Zusammensetzung, bei dem die im Anspruch 1 genannten Bestandteile a) - g) oder ein beliebiges Vielfaches der Bestandteile einer Portionseinheit miteinander gemischt werden, die sich ergebende Mischung in einer Menge an Wasser aufgelöst wird, die mindestens ausreicht, um eine Lösung zu schaffen, bei der diese Bestandteile im wesentlichen gelöst sind, um eine für die Trinkkonsumation fertige Lösung bereitzustellen.

18. Zusammensetzung nach Anspruch 1, bei der die Bestandteile a) - g) in einem beliebigen Vielfachen einer Portionseinheit enthalten sind, welche zur Bereitung von Portionseinheiten aus größeren Mengen geeignet ist.

Revendications

1. Une composition liquide, à utiliser comme boisson de réhydratation, contenant, pour servir d'unité de conditionnement aqueuse, au moins les composants ci-après :

a) de 1 à 100 g d'au moins un glucide,
b) de 2 à 2500 mg d'au moins un électrolyte,
c) de 0,1 à 750 mg d'au moins un neutraliseur à base ammonium,
d) au moins un amélioreur énergétique,
e) au moins un antioxydant,
f) de 1 à 30 mg d'au moins un stabilisateur de membrane,
g) de 1 à 200 µg d'au moins un amélioreur du fonctionnement neuro-musculaire, et
h) de l'eau en une quantité au moins suffisante pour donner une solution dans laquelle les composants a) à g) sont pratiquement dissous et cette solution étant prête à la consommation comme une boisson.

2. Une composition selon la revendication 1, dans laquelle le glucide est sélectionné dans le groupe comprenant les monosaccharides, de préférence N-acétyle-D-galactosamine, D-glucose (dextrose, sucre de raisin, sucre de maïs), D-glucosamine, N-acétyle-D-glucosamine, N-méthyl-D-glucosamine, D-mannose, D-ribose, D-xylose, D-fructose, D-galactose, D-galactosamine; des disaccharides, de préférence la cellobiose, maltose, galactose, sucrose; et des formes polymériques de mono- et disaccharides, de préférence les polymères du glucose et la maltodextrine.

3. Une composition selon la revendication 1, dans laquelle l'électrolyte est sélectionné dans le groupe comprenant les sels d'un métal des groupes I et II du système de classification périodique.

4. Une composition selon la revendication 3, dans laquelle l'électrolyte est sélectionné dans le groupe comprenant le bicarbonate de sodium, le phosphate de sodium, le phosphate de sodium acide, le bicarbonate de sodium, le chlorure de potassium, le phosphate de potassium dibasique, le carbonate de calcium et le carbonate de magnésium.

5. Une composition selon la revendication 1, dans laquelle le neutraliseur à base ammonium est choisi dans le groupe comprenant des amino-acides et leurs sels.

6. Une composition selon la revendication 5, dans laquelle le neutraliseur à base d'ammonium est choisi dans les groupe comprenant l'aspartate de D,L-magnésium, la L-arginine, et un glutamate.

7. Une composition selon la revendication 1, dans laquelle l'amélioreur énergétique est choisi dans le groupe comprenant des vitamines du groupe B, des amino-acides à chaîne ramifiée, la L-carnitine, la créatine et la choline.

8. Une composition selon la revendication 7, dans laquelle l'amélioreur énergétique est choisi dans le groupe comprenant des vitamines du groupe B en une quantité allant de 1 à 2000 µg; la L-carnitine, la créatine et la choline en une quantité de 10 à 40000 mg et des amino-acides à chaîne ramifiée en une quantité de 1 à 100 mg.

9. Une composition selon la revendication 8, dans laquelle l'amélioreur énergétique comprend au moins un composé du groupe comprenant la vitamine B1, la vitamine B2, le niacinamide, la vitamine B6, l'acide pantothénique, la L-carnitine, la créatine, le bitartrate de choline, la leucine, l'isoleucine et la valine.

10. Une composition selon la revendication 1, dans laquelle l'antioxydant est choisi dans le groupe comprenant le β-carotène en une quantité de 2 µg à 200 mg, la vitamine C en une quantité de 10 à 250 mg, la vitamine E en une quantité de 8 à 30 U.I., et du sélénium en une quantité de 10 à 300 µg.

11. Une composition selon la revendication 1, dans laquelle le stabilisateur de membrane est choisi dans le groupe comprenant la choline, la bétaïne et la méthionine.

12. Une composition selon la revendication 1, dans laquelle l'amélioreur neuro-musculaire est choisi parmi la choline et les alcools gras supérieurs, de préférence en C_{25} à C_{30}, saturés.

13. Une composition selon la revendication 12, dans laquelle l'amélioreur neuro-musculaire est l'octacosanol, compris en des quantités comprises allant de 1 à 200 µg.

14. Une composition selon la revendication 1, contenant par unité de conditionnement aqueuse au moins les composants ci-après :

a) 1 à 35 g d'au moins un glucide,
b) 2 à 2500 mg d'au moins un électrolyte,
c) 5 à 250 mg d'au moins un neutraliseur à base ammonium,
d_1) 10 à 500 µg de vitamine du groupe B,
d_2) 5 à à 500 mg de L-carnitine, créatine et choline,
d_3) 5 à 50 mg d'amino-acides à chaîne ramifiée,
e_1) 5 à 100 µg de β-carotène,
e_2) 30 à 120 mg de vitamine C,
e_3) 10 à 20 U.I. de vitamine E,
e_4) 50 à 100 µg de sélénium,
f) 3 à 10 mg d'au moins un stabilisateur de membrane,
g) 3 à 100 µg d'au moins un amélioreur de fonctionnement neuro-musculaire.

15. Une composition selon la revendication 1, contenant par unité de conditionnement au moins les composants ci-après :

a) 20 à 100 g de polymères de glucose
b) 10 à 150 mg de maltodextrine
1 à 15 g de fructose
b) 100 à 2500 mg de bicarbonate de potassium
20 à 60 mg de bicarbonate de sodium
100 à 2000 mg de chlorure de potassium

100 à 2000 mg de phosphate de potassium
50 à 750 mg de phosphate de sodium
5 à 200 mg de carbonate de calcium
5 à 200 carbonate de magnésium
c) 10 à 750 g D,L-acide aspartique (aspartate de magnésium)
20 à 750 µg L-Arginine
1 à 100 mg Glutamate
d) 1 à 500 µg Vitamine B1
10 à 2000 µg Vitamine B2
10 à 2000 µg Niacinamide
10 à 2000 µg Vitamine B6
10 à 2000 µg Acide Pantothénique
10 à 2000 µg L-Carnitine
10 à 1000 µg Créatine
4 à 40000 mg Choline
1 à 50 mg Leucine
1 à 100 mg Isoleucine
1 à 100 mg Valine
e) 5 à 200 µg β-carotène
20 à 250 mg Vitamine C
10 à 30 I.U. Vitamine E
10 à 300 µg Sélénium
f) 1 à 25 mg Bétaïne
3 à 30 mg Méthionine
g) 1 à 200 µg Octacosanol

à utiliser comme boisson de réhydratation de préférence convenant pour l'administration à des personnes effectuant un travail difficile dans des conditions sévères, à des températures élevées, et aux adaptes du sport et aux athlètes.

16. Une composition selon la revendication 1, contenant par unité de conditionnement au moins les composant ci-après :

a) 7 à 80 g Polymères de glucose
10 à 100 mg Maltodextrine
1 à 15 g Fructose
b) 50 à 1500 mg Bicarbonate de potassium
2 à 10 mg Bicarbonate de sodium
20 à 1500 mg Chlorure de potassium
20 à 1500 mg Phosphate de potassium
5 à 75 mg Phosphate de sodium
5 à 200 mg Carbonate de calcium
5 à 200 mg Carbonate de magnésium
c) 1 à 75 g D,L-acide aspartique (aspartate de aagnésium)
2 à 75 µg L-Arginine
1 à 50 mg Glutamate
d) 1 à 500 µg Vitamine B1
10 à 2000 µg Vitamine B2
10 à 2000 µg Niacinamide
10 à 2000 µg Vitamine B6
10 à 2000 µg Acide Pantothénique
1 à 200 µg L-Carnitine
5 à 100 µg Créatine
4 à 4000 mg Choline
1 à 50 mg Leucine
1 à 100 mg Isoleucine
1 à 100 mg Valine
e) 2 à 200 µg β-carotène
10 à 90 mg Vitamine C

8 à 15 I.U. Vitamine E
10 à 200 µg Sélénium
f) 1 à 25 mg Bétaïne
1 à 20 mg Méthionine
g) 1 à 20 µg Octacosanol

à utiliser comme boisson de réhydratation, convenant pour l'administration à des patients présentant des symptômes de déshydratation imputables à des sévères diarrhées ou vomissements.

17. Procédé de fabrication d'une composition liquide à utiliser comme boisson de réhydratation, dans lequel les composants a) à g) indiqués à Ta revendication 1 ou l'un quelconque parmi la pluralité des composants d'une unité de conditionnement sont mélangés, la mélange résultant étant dissous dans une quantité d'eau au moins suffisante pour donner une solution dans laquelle lesdits composants sont pratiquement dissous pour donner une composition liquide prête à la consommation en boisson.

18. Une composition selon la revendication 1, dans laquelle les composants a) à g) sont contenus en un nombre quelconque d'unités de conditionnement, utile pour la préparation d'unités de conditionnement de plus grandes quantités.